511 Issues Overview
Content

This paper provides information to assist the Policy Committee in examining content issues relating to 511. The paper contains five sections:

1. What is the issue?
2. Why is the issue important?
3. What is the breadth of experience on the issue?
4. What are alternatives?
5. Policy Recommendation(s)?

Similar papers related to consistency and cost issues are also provided. While overlap between content, consistency and cost issues is inevitable, every attempt has been made to separate these issues to promote fruitful discussion of the individual issues.

This paper does not assume either public or private sector delivery of services. The discussion of content is independent of the organizations that collect the data and provide the services. Rather, the discussion is focused on the needs of the callers.

1. What is the issue?

The overarching issue is:

"Should any National Guidelines be established to influence the type of information content to be provided by 511 services?"

If guidelines should be developed, what are the dimensions of those guidelines and how should they be established and used?

Dimensions:
- Should the guidelines recommend content categories?
- Should the guidelines discourage particular content categories?
- Should the guidelines suggest a minimum quality for each content category?

Establishment and Use:
- Who will develop the guidelines?
- What form will the guidelines take?
- Who will adopt the guidelines?

2. Why is the issue important?

The FCC has allocated 511 for "access to traveler information services." The term "traveler information" can cover an array of subjects. In December 2000, ITS America's Coordinating Council identified a number of types, or categories, of information that

could be provided via 511 (see Figure 1). It is likely that additional categories could be identified, particularly when contemplating broader transportation modes such as airline flights and inter-city trains.

- Traffic Congestion (Incidents, Closures, Restrictions)
- Public Transportation (Trip Planning, Intermodal Information)
- Special Events
- Travel-Related Weather
- Travel Times
- Link to 911 / Emergency Services (Including Roadside Assistance)
- Multimodal Routing (Trip Planning)
- Routing (Driving Directions, Travel Times)
- Local Information / Points of Interest (Taxi, Food, Parking)
- Location (Where am I?)
- Interregional Information
- Tourist Information
- Incident Reporting (input)

Figure 1 – Candidate 511 Content Categories

Further, while the FCC has given the transportation community almost total flexibility in implementing 511 services, the FCC "encourage[s] federal, state, and local government transportation agencies to work cooperatively to ensure that the transportation information provided using 511 is appropriate to the national scope of our designation and the scarcity of the N11 public resource." The ruling has created the familiar policy situation of the need to ensure that the appropriate balance of regional autonomy is maintained while still achieving "nationwide scope."

Direction on content is also important because it lays the groundwork for the policy debate over consistency of 511 service across states and regions. If it is determined that some sort of content guidelines are not desired, the issue of consistency between services may become largely moot.

From the state/local agency perspective the issue of content is important for many reasons, including:

Content drives usage, usage drives impact – Every segment of information content that could be provided via 511 will have a community of users. While the number of users and their usage characteristics will vary, the more types of content provided, the more users and usage that can be expected. Increased usage for a particular type of content will increase the chance of having a positive effect on the transportation system (e.g., a user learns that a rural interstate is impassable and takes an alternate, safer route).

Customer Expectations and Value – Prior to 511, telephone-based traveler information has been a largely state or regional phenomenon. With each service having a unique phone number, is it unlikely that a large number of users have ever used more than a

single system. With 511, users will become aware of their ability to dial 511 wherever they are and may expect the same types and quality of information content region-to-region. Further, knowing what to expect in terms of content could raise the overall value of the collective systems – and the nation's 511 services as a whole.

Ease of implementation – establishing basic content parameters could facilitate more efficient system development, as designers and implementers will have a roadmap and could more easily leverage the experience of systems from other regions.

Impact on cost and complexity – the more types of information accessible through 511, the greater the overall cost of the system. With each additional type of content, the cost and complexity of gathering and maintaining information will increase. Also, with increased options available, it could take longer for a user to find the desired information, increasing communications costs for the system and complexity for the user.

Agency image – The type of content provided could be positive or negative with respect to the public image of the transportation agency or agencies providing, sponsoring or sanctioning the service. An agency could be commended for providing high-quality useful information even if it focuses on only a narrow range of content. Or, an agency could be commended for making a full range of information available through 511. Of course, an agency could also be criticized for providing only limited information or of trying to provide so much information, that it can not provide quality information in any of the areas. With 511, it is also much more likely regions will be compared against one another, both by the media and users.

3. *What is the breadth of experience on the issue?*

With phone-based traveler information services being offered in many parts of the country, we have many years of experience to work from. U.S. DOT identified roughly 300 agency operated or sanctioned phone systems in operation that may be candidates for 511 usage. Early research indicates that three principal types of phone services are being provided today that are 511 conversion candidates: statewide road report conditions, regional multi-modal information, and transit service information. While a broad stereotype, the following provides more detail into the types of services and general reception to those services. In each case, an "aggressive" existing deployment is described to illustrate what is possible for deployment. Clearly, consideration must be given to how "typical" these examples are for other areas of the country.

Statewide road report conditions offer weather, construction and major incident information on major highways. These systems vary from a single short, human recorded message covering conditions in the entire state to sophisticated route-specific detailed information updated continuously. Experience shows demand increases substantially for this type of information when conditions are abnormal, such as a winter storm. In these cases, systems designed to handle average daily call volumes become significantly overloaded. These systems have been generally free to the user, often toll-free, with

State DOT's funding the service as part of their operations or maintenance activities. Figure 2 describes the content provided by Arizona's system.

- Events: Incidents, Road Closures, Restrictions (21 categories of road-related "events")
- Event elements: Description (from over 1900 pre-programmed descriptions), location, duration, notes
- Information updated as soon as known
- Telephone system data updated every five minutes

Figure 2 – Arizona's Content

Metropolitan traffic multi-modal services provide real-time route specific traffic information such as incidents, congestion limits, travel time, and diversion routes. Some systems also provide multi-modal information such as bus, paratransit, ferry, rail, airplane, and bicycle information. Other provided information includes parking, ridesharing, and telecommuting. These types of phone systems have been the subject of most all of the formal evaluation of traveler information phone services. In general, callers seem to be satisfied with the services, with ease of access and the quality, accuracy and timeliness of information being the most important determinants in satisfaction. We also know that a strong correlation exists between quality of content and access and the overall cost of system implementation and operation. Figure 3 describes the content to be provided by TravInfo, San Francisco Bay Area's telephone system, in an upgrade expected to be in operation by Summer 2002.

Data Types	Data Coverage	Data Accuracy	Data Timeliness
Incident and Slowdown Information	CHP patrolled segments of the Metropolitan Transportation System	Roadway name: 98% Interchange/cross-street: 95% Direction of travel: 98%	Post Incidents within 1 minute of verification Verification completed within 5 minutes 90% of the time Updates within 3 minutes of change of status Post Slowdowns within 3 minutes of verification
Speed and Congestion Status (1 MPH increments)	9 bridges, 42.6 miles Roughly 550 miles of freeways 600 milesof additional roadways (desired)	Error < 15%	Update every 90 seconds or less Latency of 90 seconds when first posted
Transportation Conditions (construction, events, etc.)	Entire Bay Area	95% of available data inputs	As changed, daily basis minimum
Transit Information (Static and Real-time)	Static information from all agencies Real-time information from BART at minimum (depending on study results)	As accurate as the source Transit vehicle arrival times within 5 minutes of actual	Weekly, when appropriate Real-time data at least every 5 minutes
Carpool, Vanpool, Bicycle, Airport Ground Transportation and Commuter Check Information (electronic format)	RIDES	As accurate as the source	As often as data is updated
Paratransit Information	All Agencies	As accurate as the source	
Weather Information	Entire Bay Area	As accurate as the source	Daily; every 4 hours in severe weather
Transportation Assets	Entire Bay Area	As accurate as the source	Quarterly
Disaster Related Information	Entire Bay Area	As accurate as the source	When appropriate, as it is received
Supplemental Information		As accurate as the source	

Note: The requirement is for automated data to be updated in the telephone system every minute; manually entered information within 5 minutes of changed circumstances

Figure 3 – TravInfo Content Requirements

In a recent analysis of the Metropolitan ITS Deployment Tracking Database, a repository of deployment data for the 78 largest metropolitan areas in the United States, indicates that 70 of the 78 areas are gathering at least some type of information that could support 511 services (see Appendix A). By 2005, the number increase to 75, with many of the regions planning to expand and improve their existing data collection systems. The analysis also indicates in most regions, only a handful collect data on a large portion of their region. For example, in 2000, 39 metropolitan areas indicate some sort of limited access surveillance, but only 9 areas report greater than 50% of their total mileage covered. Figure 4 summarizes several key categories of data collection by their total aggregated deployment in the 78 metropolitan areas reported in 1997 and 1999 and projected in 2005.

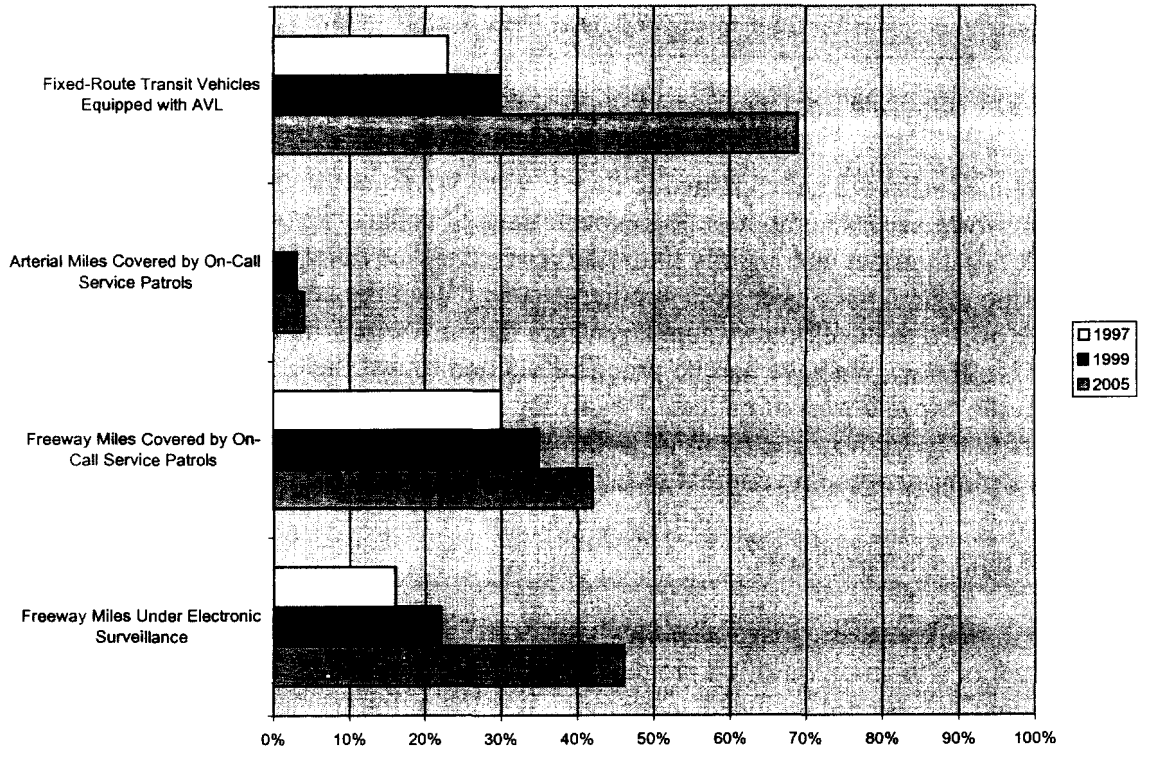

Figure 4 – National Summary of Deployment (by % of deployment opportunity)

Transit service information is generally offered by every transit agency. It is common for transit information centers to assist callers in determining route and schedule options, fares, stop and transfer locations, and many other special requests. Agencies also provide assistance, and in many cases reservations, for paratransit services. These services are all backed by customer service operators. Some of the systems use interactive voice response to support simple inquiries. Also, operators in some agencies are supported by automated trip itinerary planning systems. Overall, these services are difficult and costly to provide, and many customers hang-up before being served. These services are free to the user (though toll and long distance charges may apply) and are usually considered part of a transit agencies operational responsibilities. Figure 5 describes content provided by NJ Transit to approximately 4.2 million callers per year.

- Schedule Route and Fare Information
- Itinerary Planning Services
- Other general transit information
- Information provided via two Transit Information Centers (TIC): North Jersey TIC and South Jersey TIC
- North Jersey TIC:
  - ✓ 48 phone lines
  - ✓ Interactive Voice Response for rail callers (30% of calls)
  - ✓ 88 staff (61 full-time and 19 part-time operators, 8 supervisors)
  - ✓ 18 hours a day, 7 days a week
- South Jersey TIC
  - ✓ 8 phone lines
  - ✓ 11 staff (9 full-time and 1 part-time operators, 1 supervisor)
  - ✓ 16 hours a day, 7 days a week
- Operators access information through windows-based itinerary planning program

Figure 5 – NJ Transit's Transit Information Center Content

As important as what we have learned to date is what we do not know: the impact of having a uniform access number on the expectations of callers. Presently, with the array of difficult to remember and usually under-advertised phone numbers, it is unlikely that callers of one system have ever tried another system. With the advent of 511, callers could be expected to check the system anywhere they are when the circumstance warrants. Until now, we have had no practical method to test the effect of a universal number on the expectations of callers. Regarding content, this "ubiquity effect" could lead callers to expect the same types of information regardless of location, particularly when in a similar geographic context (e.g., city-to-city).

4. What are Alternatives?

In section 2, the issues are posed as policy questions. In this section, viable alternative policy directions for each question are described. Note that mandated federal direction or regulation options are not included as options. It is the opinion of the Working Group and the relevant staff at U.S. DOT that these options are not viable or desirable and are thus not contemplated.

Issue: *"Should any National Guidelines be established to influence the type of information content to be provided by 511 services?"*

Alternatives:

- Yes. Then all of the following issues apply.
- No. Then the following issues are not applicable.

Issue: *Should the guidelines recommend content categories?*

Alternatives:

- Specify content categories, limit flexibility. System would provide if content is available. Additional content would be discouraged.
- Identify minimum, baseline, content categories. System would provide these categories if available/appropriate in service region. Additional categories would be provided at the implementer's option. Baseline might vary based on geographic considerations (e.g. urban vs. rural).
- Do not specify content categories.

Issue: *Should the guidelines discourage particular content categories?*

Alternatives:

- Do not discourage content categories. Leave implementers the discretion to determine the range of content offered.
- Discourage certain content categories. Certain categories that may be considered either inappropriate for 511 services or not mature at the present time to warrant inclusion. This alternative could be selected for a number of reasons, including (1) wanting to establish a clear focus to 511 services by minimizing the range of content to be provided and (2) setting the tone for government-sanctioned services by separating basic and advanced content offerings.

Issue: *Should the guidelines suggest a minimum quality for each content category?*

Alternatives:

- Silent on quality. Let implementers determine the cost-benefit of content quality in their systems.
- Suggest minimum quality levels for baseline content. These quality levels could be based upon the Traveler Information Data Quality Guidelines published by ITS America in 2000. These guidelines address topics such as content accuracy, timeliness, confidence, availability, and breadth and depth of coverage. Quality of service access (e.g., response time, number of dropped calls, etc.) and methods of measuring quality could also be included.
- Suggest minimum quality levels for all content categories where possible.

Issue: *Who will develop the guidelines?*

Alternatives:

- Individual Organizations. Guidelines can be established by specific organizations for their constituents. For example, AASHTO could establish guidelines for Statewide Road Report services or APTA could do the same for Transit Service Information systems.
- This Coalition. The coalition of stakeholders could collectively create guidelines that integrate the needs and desires of various constituents into a single set of guidelines.
- U.S. DOT. The U.S. DOT can publish guidelines that have been developed either within U.S. DOT or with the assistance of outside stakeholders.

Issue: *What form will the guidelines take?*

Alternatives:

- Information Report. The guidelines will be published as the "collective thoughts of people and organizations interested in the subject." It will be published as a resource to the community.
- Recommended Practice or Policy. Slightly stronger than an information report, implementers would be actively encouraged to consider the guidelines when developing their systems.
- Standard. Stronger than a recommended practice or policy, a standard, though still voluntary, would be subject to formal consensus building and voting in its establishment.

Issue: *Who will adopt the guidelines?*

Alternatives:

- No formal adoption. Guidelines would be published, but not formally adopted as policy by any specific organization.
- Narrow adoption by sponsoring organizations. The sponsoring organizations, AASHTO, APTA and ITS America would adopt the guidelines as policy.
- Broad adoption by participating organizations. In addition to the sponsoring organizations, participating organizations such as the National Association of Counties and the Association of Metropolitan Planning Organizations would be encouraged to consider adoption of the guidelines.

5. *Policy Recommendations?*

In considering the issue of content guidelines, the Working Group advances the following straw recommendations to the Policy Committee as a means to initiate debate.

- "Should any National Guidelines be established to influence the type of information content to be provided by 511 services?" ***Yes.***
- Should the guidelines recommend content categories? ***Minimum baseline content categories.***
- Should the guidelines discourage particular content categories? ***Do not discourage content categories.***
- Should the guidelines suggest a minimum quality for each content category? ***Minimum quality levels for baseline content where possible to establish.***
- Who will develop the guidelines? ***This Coalition.***
- What form will the guidelines take? ***Recommended Practice or Policy.***
- Who will adopt the guidelines? ***Narrow adoption by sponsoring organizations, with possible encouragement of other organizations to adopt as well.***

In terms of next steps, the Working Group recommends that the Policy Committee task the Working Group to explore in depth the known candidate content categories and develop a recommendation on a minimum set to include in guidelines, and where possible, develop quality guidelines and methods of performance measurements as well. In this effort, careful consideration should given to impact of differing geography on desired content. Also, consumer studies should be conducted to understand what is desired in terms of content and in particular how "nationalizing the system" will effect the desired content.

APPENDIX A

MEMORANDUM

TO: Joe Peters

FROM: Steve Gordon

DATE: March 14, 2001

SUBJECT: "511" Analysis of Metropolitan Deployment Tracking Data

Background

At least three hundred telephone numbers currently exist for travel information systems ins the United States. To overcome the confusion caused by this array of numbers, the United States Department of Transportation (USDOT) petitioned the Federal Communication Commission (FCC) for a national assignment of a single three-digit dialing code, N11. On July 20, 2000 the FCC assigned 511 as a nationwide telephone number for ITS traveler information.

The US DOT Joint Program Office has requested an analysis of the Metropolitan Deployment Tracking database for the purpose of understanding the level of infrastructure currently in place, or projected to be in place by 2005, that would support implementation of a 511 system. It is expected that a 511 system would convey to travelers information describing the level of congestion, incidents, and planned events affecting highway travel as well as route, schedule and fare information for the transit system in a metropolitan area. It is important, therefore, to understand the availability of such information in a metropolitan area in order to gauge its readiness for implementation of 511. In order to develop this understanding, recently collected data contained in the Metropolitan Deployment tracking database was used. [1]

Three of the deployment tracking indicators were selected to provide an estimate of the level of data collection and dissemination within each metropolitan area. The first of these was the coverage of freeway surveillance, using sensors and/or probes, to provide real time traffic information. The second was the coverage of incident detection and verification, using close circuit television (CCTV) and service patrols, to provide real time data on incident location, severity, and clearance time. Finally, the availability of transit information was assessed based on the existence of an automatic phone service providing schedules, routes, and fares.

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[1] Additional Resources: "Measuring ITS Deployment and Integration (Electronic Document Number: 4372)." U.S. Department of Transportation, Joint Program Office for Intelligent Transportation Systems, 400 Seventh St., SW (HVH-1), Washington, DC 20590, Phone: 202-366-9536, Fax: 202-366-3302, Web: http://www.its.dot.gov.

Measuring the Level of 511 Readiness

The process for determining the level of 511 readinesses in a metropolitan area makes use of the indicators and threshold values contained in Table 1. Thresholds for Freeway surveillance and Incident Management CCTV/service patrol coverage is set at zero, meaning that a metropolitan area is given credit for any level of deployment. An excursion is provided at the end of this memo that evaluates the sensitivity of the results to variations in these thresholds in the range of 10% to 50% coverage.

Table 1
Component Indicators and Threshold Values Used to Measure 511Readiness

Traveler Information	Indicators	Threshold Values
Traffic Congestion	% freeway miles under electronic surveillance	Greater than or equal to 0%
Traffic Incidents	% freeway miles with Freeway Service Patrols % freeway miles with CCTV % arterial miles with Arterial Service Patrols % arterial miles with CCTV	Greater than or equal to 0%
Transit Route, Schedule, and Fares	% agencies operating telephone information number	Greater than or equal to 0%

A metropolitan area is assigned a rating of "3" in readiness if it exceeds the threshold value for at least one of the indicators in each of the three traveler information categories. A region is assigned a rating of "2" in readiness if it exceeds the threshold value for two of the traveler information categories. A metropolitan area is assigned a rating of "1" in readiness if it exceeds the threshold value for one of the traveler information categories. A rating of "0" is assigned if an area does not exceed any of the threshold values.

As shown in Figure 1, using the methodology described above, a total of 30 metropolitan areas are rated "3" in readiness, 28 are rated "2" in readiness and 12 are assigned a rating of "1" in readiness in 2000. A total of 8 areas do not cross any of the threshold values and are assigned a rating of "0". Table 1 lists the 78 metropolitan areas and their respective readiness rating for 2000.

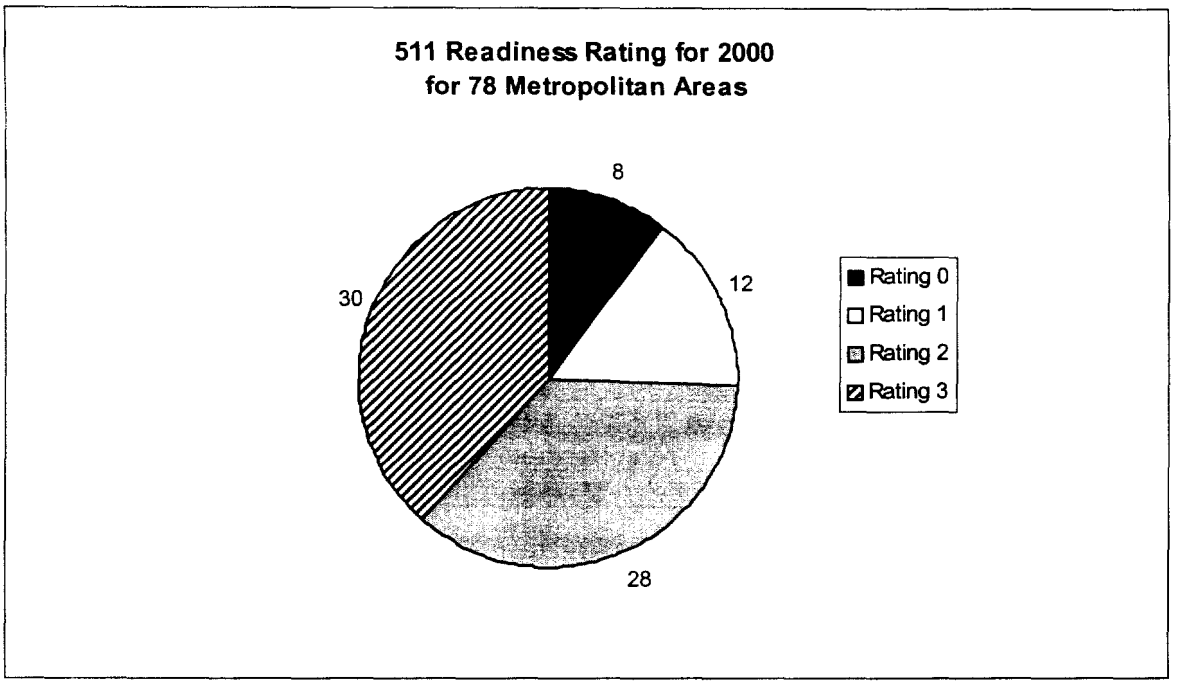

Figure 1

MetroArea	Surveillance	Patrols/CCTV	Automated Transit Information	Rating
Albany, Schenectady, Troy	Yes	yes	yes	3
Atlanta	Yes	yes	yes	3
Baltimore	Yes	yes	yes	3
Boston, Lawrence, Salem	Yes	yes	yes	3
Buffalo, Niagara Falls	Yes	yes	yes	3
Charlotte, Gastonia, Rock Hill	yes	yes	yes	3
Chicago, Gary, Lake County	yes	yes	yes	3
Cincinnati, Hamilton	yes	yes	yes	3
Dallas, Fort Worth	yes	yes	yes	3
Detroit, Ann Arbor	yes	yes	yes	3
Fresno	yes	yes	yes	3
Greenville, Spartanburg	yes	yes	yes	3
Hartford, New Britain, Middletown	yes	yes	yes	3
Houston, Galveston, Brazoria	yes	yes	yes	3
Indianapolis	yes	yes	yes	3
Los Angeles, Anaheim, Riverside	yes	yes	yes	3
Louisville	yes	yes	yes	3
Milwaukee, Racine	yes	yes	yes	3
Minneapolis, St. Paul	yes	yes	yes	3
New Haven, Meriden	yes	yes	yes	3
New York, Northern New Jersey, Southwestern Connecticut	yes	yes	yes	3
Philadelphia, Wilmington, Trenton	yes	yes	yes	3

MetroArea	Surveillance	Patrols/CCTV	Automated Transit Information	Rating
Pittsburgh, Beaver Valley	yes	yes	yes	3
Providence, Pawtucket, Fall River	yes	yes	yes	3
Sacramento	yes	yes	yes	3
Salt Lake City, Ogden	yes	yes	yes	3
San Diego	yes	yes	yes	3
San Francisco, Oakland, San Jose	yes	yes	yes	3
Seattle, Tacoma	yes	yes	yes	3
Washington	yes	yes	yes	3
Total Metropolitan areas with rating of 3 : 30				
Albuquerque	no	yes	yes	2
Austin	yes	yes	no	2
Bakersfield	yes	yes	no	2
Baton Rouge	yes	yes	no	2
Charleston	no	yes	yes	2
Cleveland, Akron, Lorain	no	yes	yes	2
Columbus	no	yes	yes	2
Dayton, Springfield	no	yes	yes	2
Denver, Boulder	no	yes	yes	2
El Paso	yes	yes	no	2
Greensboro, Winston-Salem, High Point	no	yes	yes	2
Hampton Roads	yes	yes	no	2
Harrisburg, Lebanon, Carlisle	no	yes	yes	2
Jacksonville	no	yes	yes	2
Memphis	no	yes	yes	2
Miami, Fort Lauderdale	no	yes	yes	2
New Orleans	no	yes	yes	2
Orlando	yes	yes	no	2
Phoenix	no	yes	yes	2
Portland, Vancouver	yes	yes	no	2
Raleigh-Durham	no	yes	yes	2
Rochester	yes	yes	no	2
San Antonio	no	yes	yes	2
Springfield	no	yes	yes	2
St. Louis	yes	yes	no	2
Tampa, St. Petersburg, Clearwater	no	yes	yes	2
Tucson	no	yes	yes	2
Wichita	no	yes	yes	2
Total Metropolitan areas with rating of 2 : 28				
Allentown, Bethlehem, Easton	no	yes	no	1
Birmingham	no	yes	no	1
Grand Rapids	no	yes	no	1
Kansas City	no	yes	no	1
Knoxville	no	yes	no	1
Las Vegas	no	yes	no	1

MetroArea	Surveillance	Patrols/CCTV	Automated Transit Information	Rating
Little Rock, North Little Rock	no	no	yes	1
Omaha	no	yes	no	1
Sarasota-Bradenton	no	no	yes	1
Scranton, Wilkes-Barre	no	yes	no	1
Syracuse	no	yes	no	1
West Palm Beach, Boca Raton, Delray	no	yes	no	1
Total Metropolitan areas with rating of 1 : 12				
Honolulu	no	no	no	0
Nashville	no	no	no	0
Oklahoma City	no	no	no	0
Richmond, Petersburg	no	no	no	0
San Juan	no	no	no	0
Toledo	no	no	no	0
Tulsa	no	no	no	0
Youngstown, Warren	no	no	no	0
Total Metropolitan areas with rating of 0 : 8				

In the deployment tracking surveys respondents were asked to project the level of deployment for 2005. Using these projections for 2005, it can be calculated that the number of metropolitan areas rated "3" will increase from 30 to 45 by 2005. The number rated "2" will decrease from 28 to 23 and the number rated "1" will decrease from 8 to 7. Finally, the number rated "0", with no data gathering or dissemination in any of the three categories, will reduce from 8 to 3. Table 2 lists the 78 metropolitan areas and their respective readiness rating for 2005.

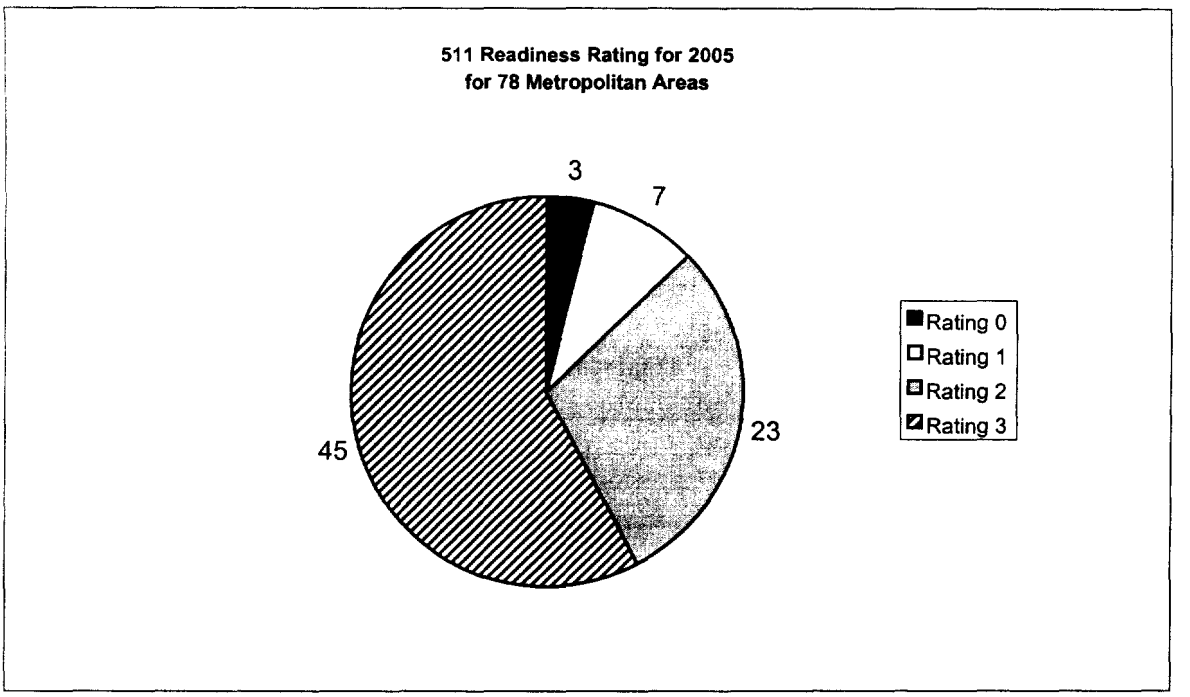

Figure 2

MetroArea	Surveillance	Patrols/CCTV	Automated Transit Information	Rating
Albany, Schenectady, Troy	yes	yes	yes	3
Atlanta	yes	yes	yes	3
Baltimore	yes	yes	yes	3
Baton Rouge	yes	yes	yes	3
Boston, Lawrence, Salem	yes	yes	yes	3
Buffalo, Niagara Falls	yes	yes	yes	3
Charleston	yes	yes	yes	3
Charlotte, Gastonia, Rock Hill	yes	yes	yes	3
Chicago, Gary, Lake County	yes	yes	yes	3
Cincinnati, Hamilton	yes	yes	yes	3
Cleveland, Akron, Lorain	yes	yes	yes	3
Columbus	yes	yes	yes	3
Dallas, Fort Worth	yes	yes	yes	3
Detroit, Ann Arbor	yes	yes	yes	3
El Paso	yes	yes	yes	3
Fresno	yes	yes	yes	3
Greensboro, Winston-Salem, High Point	yes	yes	yes	3
Greenville, Spartanburg	yes	yes	yes	3
Harrisburg, Lebanon, Carlisle	yes	yes	yes	3
Hartford, New Britain, Middletown	yes	yes	yes	3
Houston, Galveston, Brazoria	yes	yes	yes	3
Indianapolis	yes	yes	yes	3

MetroArea	Surveillance	Patrols/CCTV	Automated Transit Information	Rating
Jacksonville	yes	yes	yes	3
Knoxville	yes	yes	yes	3
Los Angeles, Anaheim, Riverside	yes	yes	yes	3
Louisville	yes	yes	yes	3
Miami, Fort Lauderdale	yes	yes	yes	3
Milwaukee, Racine	yes	yes	yes	3
Minneapolis, St. Paul	yes	yes	yes	3
New Haven, Meriden	yes	yes	yes	3
New York, Northern New Jersey, Southwestern Connecticut	yes	yes	yes	3
Orlando	yes	yes	yes	3
Philadelphia, Wilmington, Trenton	yes	yes	yes	3
Pittsburgh, Beaver Valley	yes	yes	yes	3
Providence, Pawtucket, Fall River	yes	yes	yes	3
Raleigh-Durham	yes	yes	yes	3
Rochester	yes	yes	yes	3
Sacramento	yes	yes	yes	3
Salt Lake City, Ogden	yes	yes	yes	3
San Diego	yes	yes	yes	3
San Francisco, Oakland, San Jose	yes	yes	yes	3
Seattle, Tacoma	yes	yes	yes	3
Tampa, St. Petersburg, Clearwater	yes	yes	yes	3
Tucson	yes	yes	yes	3
Washington	yes	yes	yes	3
Total Metropolitan areas with rating of 3: 45				
Albuquerque	no	yes	yes	2
Allentown, Bethlehem, Easton	yes	yes	no	2
Austin	yes	yes	no	2
Bakersfield	yes	yes	no	2
Birmingham	yes	yes	no	2
Dayton, Springfield	no	yes	yes	2
Denver, Boulder	no	yes	yes	2
Hampton Roads	yes	yes	no	2
Kansas City	yes	yes	no	2
Las Vegas	yes	yes	no	2
Memphis	no	yes	yes	2
Nashville	yes	yes	no	2
New Orleans	no	yes	yes	2
Phoenix	no	yes	yes	2
Portland, Vancouver	yes	yes	no	2
Richmond, Petersburg	yes	no	yes	2
San Antonio	no	yes	yes	2
Scranton, Wilkes-Barre	yes	yes	no	2
Springfield	no	yes	yes	2
St. Louis	yes	yes	no	2
Syracuse	yes	yes	no	2

MetroArea	Surveillance	Patrols/CCTV	Automated Transit Information	Rating
West Palm Beach, Boca Raton, Delray	yes	yes	no	2
Wichita	no	yes	yes	2
Total Metropolitan areas with rating of 2: 23				
Little Rock, North Little Rock	no	no	yes	1
Oklahoma City	no	yes	no	1
Omaha	no	yes	no	1
San Juan	no	no	yes	1
Sarasota-Bradenton	no	no	yes	1
Toledo	no	no	yes	1
Tulsa	no	yes	no	1
Total Metropolitan areas with rating of 1: 7				
Grand Rapids	no	no	no	0
Honolulu	no	no	no	0
Youngstown, Warren	no	no	no	0
Total Metropolitan areas with rating of 0: 3				

Sensitivity Analysis

Threshold values for several indicators were varied to examine the resulting distribution of metropolitan area readiness. Values ranging between 0% and 50% were tested for indicators measuring freeway surveillance (Table 3) and traffic incident detection (Table 4.) Table 5 contains the results of considering both types of surveillance at the same time (e.g. metro areas with both freeway and incident management surveillance at 10%, 20% and so on.)

Table 2
Sensitivity Values Tested

Traveler Information	Indicators	Test Values
Traffic Congestion	% freeway miles under electronic surveillance	Greater than 0% Greater than 10% Greater than 20% Greater than 30% Greater than 40% Greater than 50%
Traffic Incidents	% freeway miles with Freeway Service Patrols % freeway miles with CCTV % arterial miles with Arterial Service Patrols % arterial miles with CCTV	Greater than 0% Greater than 10% Greater than 20% Greater than 30% Greater than 40% Greater than 50%
Transit Route, Schedule, and Fares	% agencies operating telephone information number	Greater than 0%

Table 3
Number of Metropolitan Areas with Coverage Greater than Variable Thresholds
Freeway Surveillance Indicator, 2000 and 2005

	% Freeway Surveillance 2000					
	0%	**10%**	**20%**	**30%**	**40%**	**50%**
Level 3	30	26	21	15	10	8
Level 2	28	30	32	37	40	42
Level 1	12	14	17	18	20	20
Level 0	8	8	8	8	8	8
Total:	**78**	**78**	**78**	**78**	**78**	**78**

	% Freeway Surveillance 2005					
	0%	**10%**	**20%**	**30%**	**40%**	**50%**
Level 3	45	43	40	35	29	23
Level 2	23	25	25	27	32	35
Level 1	7	7	10	13	14	17
Level 0	3	3	3	3	3	3
Total:	**78**	**78**	**78**	**78**	**78**	**78**

Table 4
Number of Metropolitan Areas with Coverage Greater than Variable Thresholds
Incident Management Indicator, 2000 and 2005

	%CCTV/Service Patrol 2000					
	0%	10%	20%	30%	40%	50%
Level 3	30	28	28	21	16	12
Level 2	28	25	20	25	24	28
Level 1	12	15	19	20	26	23
Level 0	8	10	11	12	12	15
Total:	**78**	**78**	**78**	**78**	**78**	**78**

	%CCTV/Service Patrol 2005					
	0%	10%	20%	30%	40%	50%
Level 3	45	45	43	40	34	31
Level 2	23	21	19	18	22	24
Level 1	7	8	12	16	18	18
Level 0	3	4	4	4	4	5
Total:	**78**	**78**	**78**	**78**	**78**	**78**

Table 5
Number of Metropolitan Areas with Coverage Greater than Variable Thresholds
Freeway Surveillance and Incident Management Indicators, 2000 and 2005

	% Freeway Surveillance and CCTV/Service Patrols 2000					
	0%	10%	20%	30%	40%	50%
Level 3	30	25	21	13	6	3
Level 2	28	26	22	22	22	22
Level 1	12	16	22	29	32	32
Level 0	8	11	13	14	18	21
Total:	**78**	**78**	**78**	**78**	**78**	**78**

	% Freeway Surveillance and CCTV/Service Patrols 2005					
	0%	10%	20%	30%	40%	50%
Level 3	45	43	38	34	27	21
Level 2	23	23	22	18	17	17
Level 1	7	8	13	18	26	30
Level 0	3	4	5	8	8	10
Total:	**78**	**78**	**78**	**78**	**78**	**78**

Summary and Conclusions

Tables 3, 4, and 5 show that the ratings assigned to metropolitan areas are quite sensitive to changes in the threshold values for freeway surveillance and incident verification. As thresholds increase, the number of metropolitan areas meeting the higher level ratings decrease, with a corresponding movement to the lower levels. This trend is magnified as shown in Table 5, where thresholds are varied for both types of surveillance simultaneously. In this case, if the level of surveillance of both is set at fifty percent, only three metropolitan areas are included in level 3.

Even more potentially significant is the relatively low number of metropolitan areas that pass even the first threshold, surveillance greater than zero. This indicates that in the year 2000 less than half of the metropolitan areas have even a small level deployment in all three areas. While 2005 projections show improvement, it appears that by that time a substantial number of areas will still be without real time data in all three areas.

While transit data dissemination is widespread, deployment of freeway surveillance and incident detection is limited, particularly at higher coverage levels. These latter two factors were studied separately and the results are shown in the following figures. The charts shows the number of metropolitan areas(on the left axis) having a deployment level greater than or equal to the coverage selected from the bottom axis (0% equates to more than 0.) Data for 2000 and 2005 (projections) are shown.

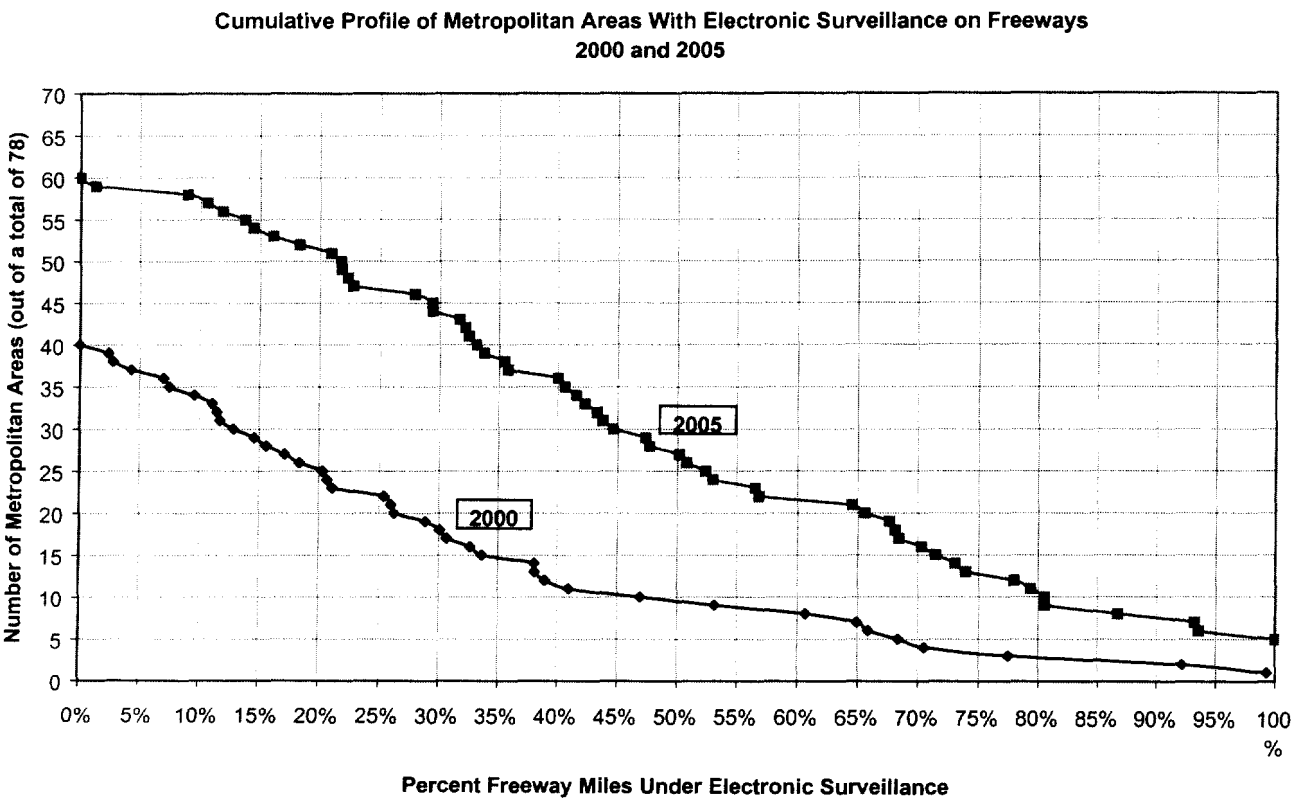

Figure 3

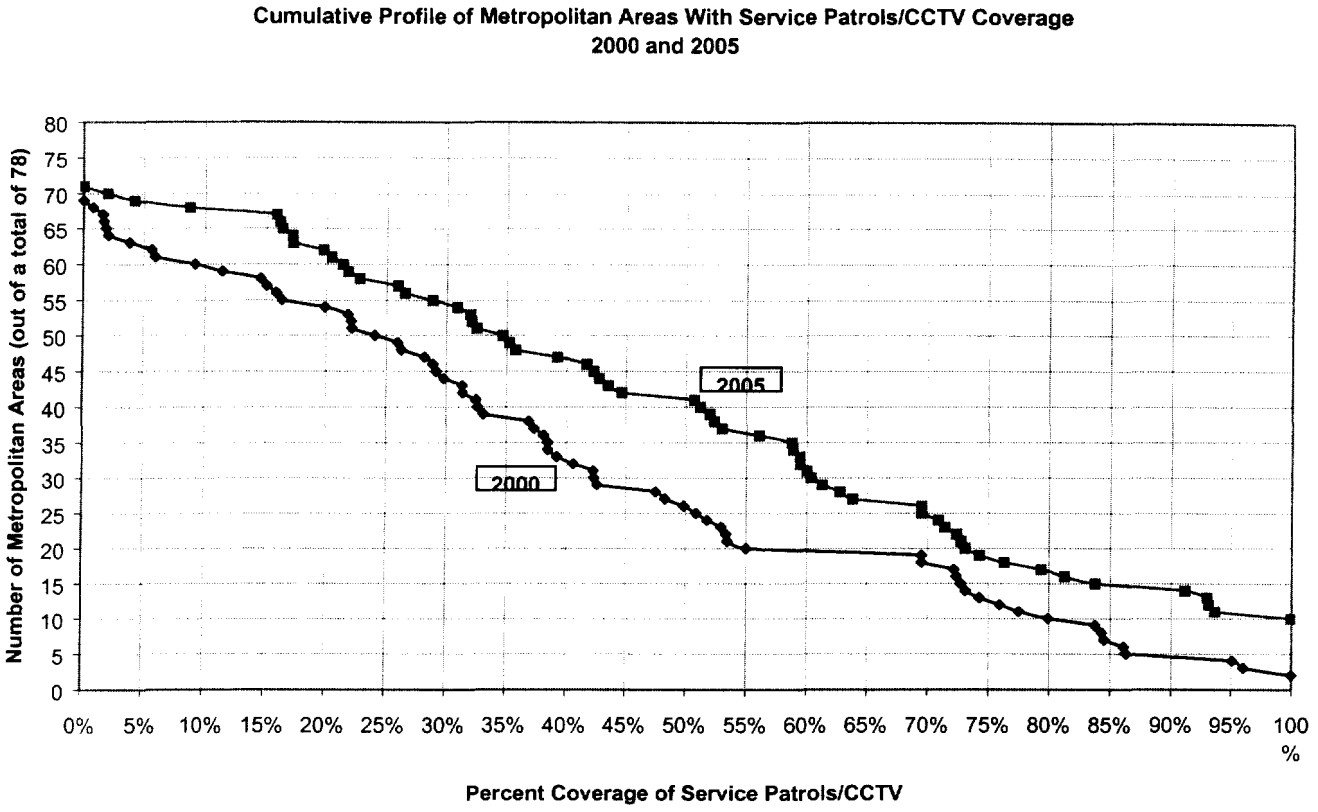

Figure 4

Figure 3 shows the breakout for levels of freeway surveillance in 2000 and 2005. The chart shows that in 2000, fully half of the metropolitan areas surveyed reported no traffic sensors or probe vehicles. Of those reporting they did have freeway surveillance, the coverage in most cases was 30% or less. In 2005, the number of areas without surveillance is reduced to 19, and the coverage levels increase, but still with most reporting 50% or less coverage. Figure 4 shows the same information for incident management coverage. In this case, only 10 metropolitan areas report no coverage in 2000, with about half of those reporting some deployment at the 40% or less level. Looking ahead to 2005 does not change the picture substantially, showing that only modest growth in deployment is planned. These charts indicate that even by 2005, a substantial number of metropolitan areas will have no deployed capability for real-time data gathering concerning traffic and incidents, while those that do will typically cover half or less of the roadway.

511 Issues Overview
Consistency

This paper provides information to assist the Policy Committee in examining consistency issues relating to 511. The paper contains five sections:

1. What is the issue?
2. Why is the issue important?
3. What is the breadth of experience on the issue?
4. What are alternatives?
5. Policy Recommendation(s)?

Similar papers related to content and cost issues are also provided. While overlap between content, consistency and cost issues is inevitable, every attempt has been made to separate these issues to promote fruitful discussion of the individual issues. The content and cost papers address many issues of consistency, but they are significant enough to warrant separate discussions.

This paper does not assume either public or private sector delivery of services. The discussion of consistency is independent of the organizations that collect the data and provide the services. Rather, the discussion is focused on the needs of the callers.

1. What is the issue?

The overarching issue is: ***"Should there be national consistency on the 511 service?"***

What does consistency mean in the context of 511 services? In our context, consistency means the similarity of caller experience across multiple systems offering 511 services across the country. The Working Group has not considered consistency to mean exactly identical.

If consistency is desired, in what forms should consistency take? How should such consistency be established?

Some of the areas that are candidates for consistency include:

- System Navigation
- System Access Quality
- Initial Greeting
- Advertising/Sponsorship rules
- ADA Compliance
- Hours of System Operation
- Multi-lingual capabilities
- Timestamp information
- Roadside signing

2. *Why is the issue important?*

This issue is important for at least two reasons:

1. The FCC "encourage[s] federal, state, and local government transportation agencies to work cooperatively to ensure that the transportation information provided using 511 is appropriate to the national scope of our designation and the scarcity of the N11 public resource." In other words, ***the FCC expects the transportation industry to deliver at least some level of consistent service via 511***.
2. With the possibility of dialing the same number for information in multiple regions, consumers could expect similar service in regions served by different systems. In fact, callers could be completely unaware that 511 services are separate systems. In other words, ***callers could expect and even demand consistency of 511 services***.

Well crafted policies on consistency could accelerate the introduction and expand the usage and impact of 511 services. Poorly crafted policies could slow or stifle introduction and usage. How the transportation industry chooses to go about attempting to achieve consistency and in what areas are efforts focused is the subject of this discussion.

3. *What is the breadth of experience on the issue?*

911 is the only comparable phone-based service that uses a uniform abbreviated number on an essentially nation-wide basis to access services provided by a patchwork of call centers operated by all forms of public agencies. In terms of consistency, the only notable item is that operators are discouraged from taking time to let the caller know what agency the call has gone to ("xxx county 911 center..."). Instead, they are encouraged to say just "911". Other than that, there is little done at the national level that can be looked upon as consistency. Though not the norm, some states are adopting performance standards for the 911 system, which could be considered state level efforts to establish consistency of service.

In most other cases of national phone-based services, callers dial the same 10-digit number and access the same system, thus essentially guaranteeing consistency of service.

Other than helping identify areas for consideration, present telephone-based traveler information systems offer little assistance in the issue of consistency. Perhaps the only consistent thread across these systems is that they all have some sort of initial greeting that includes the project name and/or the sponsoring agency(ies).